



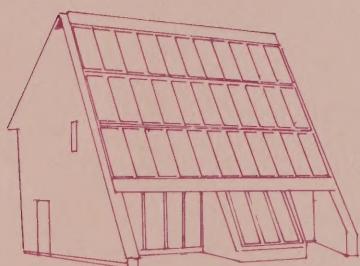
Ministry of  
Municipal Affairs  
and Housing

# OWNERSHIP HOUSING SURVEY

in seven Ontario cities  
October, 1981

POLICY AND PROGRAM  
DEVELOPMENT SECRETARIAT

May, 1982





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Ministry of  
Municipal Affairs  
and Housing

# OWNERSHIP HOUSING SURVEY

in seven Ontario cities  
October, 1981

Hon. Claude F. Bennett  
Minister

Richard M. Dillon  
Deputy Minister

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May, 1982

The Survey field work was  
carried out by Complan  
Research Associates Ltd.

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### SUMMARY OF MAJOR RESULTS

This report contains detailed statistical results, descriptions and analyses of data from an October, 1981 telephone survey of home owners in seven cities across Ontario: Hamilton, London, Ottawa, Sudbury, Thunder Bay, Toronto and Windsor. A total of 5,839 owners were interviewed.

The specific subjects on which statistics are compiled include:

- Social and financial characteristics of home owners by city.
- Comparison of social and financial characteristics between high and low Gross Debt Service (GDS) ratio households.
- Projected financial characteristics among households that will renew mortgages before 1985.

Some of the main conclusions of this study are outlined below:

- Home owners across the seven cities show more similarity in characteristics than might be expected. For example, large differences in monthly payments may be a common perception, but results indicate that monthly payments in Toronto and Sudbury differ by only \$58.

- Although characteristics across the seven cities are similar, some differences are apparent. Specifically, payments, mortgage principals and incomes are related. Such relationships can be built into two conceptual models. Toronto and Ottawa fit a high cost/high income model while Windsor statistics indicate lower costs and incomes. In the other areas the patterns are less pronounced, although London is inclined toward a high cost/high income model.
- Generally, average Gross Debt Service ratios (GDS) tend to be higher in high cost cities and vice versa, but the range from high to low is relatively small. The narrow range suggests that higher income does compensate for costs in high cost cities. However, income does not compensate completely, because high cost cities still have high GDS ratios.
- Average GDS ratios range from .109 in Thunder Bay to .141 in Toronto, and a surprisingly large 52 per cent of owners have low GDS ratios of .10 and less. An explanation for the large number of low ratios is that almost half the number of owners do not hold mortgages. In addition, a substantial number of mortgage holders have low interest fixed term mortgages.
- About 5 per cent of owners have high GDS ratios above .30. Toronto is high with 13.5 per cent while Thunder Bay is low at 3.7 per cent.

- Part of the high GDS group can be characterized as young families with relatively low income who have purchased their homes recently. However, other reasons must be sought for a large number of high GDS owners. A sizable group may simply opt for a high level of shelter consumption.
- Among households who will renew mortgages before 1985, the average increase in monthly payments will be near 40 per cent, if mortgage rates are 19 per cent. The per cent changes are similar to other estimates and are also consistent with small GDS changes. A large per cent change in payments can result in a small GDS change.
- Present average GDS ratio among 1982 renewers is .181, but mortgage renewal at 19 per cent increases average GDS only to .210, given an 11 per cent income increase assumption. One reason for the moderate GDS increase is that owners are assumed able to clear second mortgages before renewal or are willing to generate equivalent rental income. However, inclusion of present second mortgage payments does not greatly affect projected GDS ratios.

## INTRODUCTION

The highly volatile interest rates experienced during the past several years have undoubtedly produced financial hardships for some homeowners who renewed mortgages during periods of peak interest rates. In consequence, considerable public interest in the financial status of homeowners exists, but particular interest focuses on owners who must renew mortgages in the near future. Although the financing of homeownership has attracted public attention, little objective information is available. Census data do not contain financial detail, and the last extensive study was the 1984 CMHC Survey of Housing Units (SHU). The deficiency of information should be partially remedied by statistics contained in this paper.

The paper provides detailed comparisons of social and financial characteristics of homeowners in seven Ontario Census Metropolitan Areas (CMA's).

Specific subjects presented are:

- Comparisons by city.
- Comparisons of high versus low Gross Debt Service (GDS) households.
- Comparisons of financial projections for monthly payments and GDS ratios by year of mortgage renewal.

### Survey Background

Statistics contained in the report have been calculated from survey data collected through telephone interviews among random samples of all private ownership households in seven CMA's during October, 1981. The 1981 survey is the first ownership study sponsored by the Ministry of Municipal Affairs and Housing, but the work is closely related to the annual Rental Market Survey which has been replicated annually since 1977.

Survey work, data coding and editing was conducted by Complan Research Associates Ltd., Toronto, Ontario. All analysis and statistics contained in this paper are the work of the Policy and Program Development Secretariat staff. The Ministry of Municipal Affairs and Housing is solely responsible for all conclusions and statistical quality.

The surveyed cities, sample sizes and response rates are given in the Table below:

<u>City</u>	<u>Sample Size</u>	<u>Response Rate*</u>
Hamilton	600	65.5
London	730	69.0
Ottawa	655	66.2
Sudbury	922	71.6
Thunder Bay	1,245	70.6
Toronto	791	60.6
Windsor	896	65.6

\*Overall Response Rate for both ownership and rental surveys.

Results of the Ownership Survey, like all sample surveys, contain errors that result from sampling and measurement methods. In particular, the telephone survey method introduced a potential source of error, because respondents may be asked to recall complex financial information during a telephone interview. Few respondents are willing to 'look up' specific financial records. Error is inherent in survey methods, and therefore, all survey results are subject to various limitations and qualifications. The qualifications can vary from survey to survey, and the results cannot be placed in perspective without an appreciation of some details of the survey background and sample reliability. Detailed background information is contained in the Appendix.

## I. SOCIAL AND FINANCIAL CHARACTERISTICS OF HOME OWNERS BY CITY

Some differences in social and financial characteristics across the seven cities surveyed are apparent. However, the overall impression gained from statistics in Tables 1.1 to 1.14 is that the conditions of ownership are more similar than different in large Ontario urban areas. For example, ownership costs in Toronto may be thought much higher than in Sudbury. Survey results verify such impressions, but the differences are less than might be expected. The average monthly payment in Toronto is \$317 compared to \$259 in Sudbury.

On the other hand, many of the differences among cities are related and several patterns can be identified. For example, high payments, high principals and high incomes tend to go together. Generally, Toronto and Ottawa fit a high cost/high income model while Windsor fits a relatively low cost/low income model. The patterns in other cities are less pronounced but London is inclined toward a high cost/high income model. Specific details relevant to the above cost and income characterizations can be found in the following descriptions of Tables 1.1 to 1.14. However, only the most significant features are described, but interested readers can elaborate the models from statistics presented in the Tables. The differences across city may also suggest other models.

A) Social and Dwelling Type Measures

Table 1.1 - Dwelling Type

Most owners reside in single detached dwellings, and only 5.2 per cent of surveyed units are in higher density row and apartment units. The distribution of dwelling types across city is similar for Toronto and Ottawa. Much higher percentages of row and apartment units are present in Toronto and Ottawa. The percentages of high density units are 12 and 15 per cent, respectively. The other five cities range from a high of 6 per cent in Hamilton to a low of 0.7 per cent in Thunder Bay. In terms of a high cost/high income model, the relatively high housing costs and, particularly, land cost in Toronto and Ottawa may explain the greater popularity of higher density units.

Table 1.2 - Head of Household Age

In general, about 16 per cent of owners are 65 years and older while 2 per cent are less than 25 years. Age distributions across city are very similar but Windsor is an exception. Windsor registered the highest percentages in both the oldest and youngest age groups. Toronto and Ottawa show slightly lower levels of young owners. Relatively few young owners might be expected in Toronto and Ottawa, because shelter costs are relatively high. Typical young

families have lower incomes and have not accumulated large downpayments. However, Sudbury also has considerably reduced levels of young owners less than 35 years. The smaller per cent of young owners in Sudbury probably reflects the presence of subsidized rental units available to many mine employees. Renters of such units would experience large shelter cost increases if they entered the ownership market.

Table 1.3 - Annual Household Income

Overall, a surprisingly high per cent of owners appear in the lowest income category. Moderate incomes of less than \$25,000 comprise 36 per cent of all owners. However, the percentage of low income owners can be partially attributed to senior households. Sixteen per cent of owners are 65 years and older and few retirement incomes are in excess of \$25,000.

Gross household income shows fairly strong differences across the cities with average incomes ranging from \$39,000 in Ottawa to \$28,000 in Windsor. The cities characterized as high cost/high income cities have the highest averages while Windsor, characterized as relatively low cost/low income, has the lowest average income.\*

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\*Income averages include cases with estimated incomes. Some respondents reported income categories rather than exact income. Income estimates were made from within the category medians. Incomes for seniors were not estimated. In addition, 1980 income levels were surveyed and increased by the CPI inflation rate of 12.7 per cent to estimate 1981 levels. The procedure is considered more reliable than surveying present year income.

Table 1.4 - Household Size

Table 1.5 - Year Purchased

Table 1.6 - Per cent New House Purchases

Tables giving distributions of household size, year of purchase and per cent new house purchase are provided for general interest. Generally, large differences across cities are not apparent. However, some findings of note are:

- Almost 11 per cent of owner households are single persons.
- A surprisingly large per cent of mortgage holders (43 per cent) purchased their homes from 1975 to 1979. Only 17 per cent purchased the last two years when volatile interest rates were present.
- Overall, about 32 per cent of mortgage holders purchased new houses, rather than resales. Little differences across city are present.

B) Financial Measures

Table 1.7 - Per cent Owners Holding Mortgages

Table 1.8 - Per cent Mortgage Holders with Second Mortgages

Table 1.9 - Per cent Owners Holding Fixed Term Mortgages

A surprisingly large per cent of owners (46 per cent) do not have mortgages. The individual cities range from a high of 50 per cent in Windsor to a low of 38 per cent in Ottawa. Forty-nine per cent of Toronto owners do not have mortgages. 'Per cent mortgage holder' is one of a few measures where Toronto and Ottawa are not similar. Therefore, the measure 'per cent mortgage holder' does not support the cost/price models. However, the per cent of mortgage holders with second mortgages is consistent with the high cost/high income model. Toronto and Ottawa are much higher than

other cities at 20 per cent and 11 per cent, respectively. On the other hand, Windsor is a close third, also 11 per cent. The finding may be thought inconsistent, but on reflection, high rates of second mortgages are consistent with both high cost/high income and low cost/low income models. Both extreme type cost models might be expected to produce financial strains that result in increased rates of second mortgage holders.

Table 1.10 - Outstanding Principals\*

Table 1.11 - Monthly Payments\*\*

Monthly payments and principals are closely related, and the pattern of payments and principals generally follow the cost and income models. Ottawa has the highest average payment at \$333, closely followed by Toronto at \$318, and London at \$281. Thunder Bay has the lowest average payments at \$225, but is closely followed by Windsor at \$226. The ranking of outstanding principals by city is somewhat different. Toronto is highest at \$43,100, followed by London at \$37,100 and Ottawa at \$36,800. Windsor has the lowest average principal at \$29,800. The finding that Ottawa has highest average monthly payments, but only third highest principals, is not inconsistent. Monthly payment statistics include households without mortgages and Ottawa has a high per cent

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\* Total Principal: all mortgages at last renewal.

\*\*Monthly payments include principal, interest, and taxes.

of mortgage holders. The number of households who only pay taxes substantially lower average payments in Toronto and London.

Table 1.12 - Gross Debt Service Ratio (GDS)\*

GDS ratios are probably the statistic of greatest interest. GDS is usually interpreted as an approximate indicator of affordability, and a GDS of .30 is sometimes used to divide households into high and low GDS groups. GDS's of less than .30 are usually considered financially manageable. In addition, GDS ratios by city are interesting in terms of the cost/income model developed throughout this section. An analytical question is whether higher income compensates for higher costs in the high cost/high income cities.

Inspection of the average GDS ratios by city indicates that some differences exist but the range of average GDS is very narrow. Average GDS ratios range from a high of .14 in Toronto to a low of .11 in Thunder Bay. Ottawa is a close second high at .13 while Windsor tends to be low at .12. Generally, the high cost/high income cities have higher GDS ratios and lower cost cities tend to have lower ratios, but

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\*GDS ratios are monthly payments (principal, interest and taxes) divided by monthly gross household income. As previously noted, income estimates are used. Extreme GDS values of greater than 1.0 and less than 0.01 are discarded to improve reliability.

the differences are very small. The very narrow range in average GDS's suggests that income does compensate for higher costs. However, the slightly higher ratios in high cost cities indicate that income does not compensate completely for higher shelter costs.

Similar conclusions can be reached by inspecting the distribution of GDS ratios. Toronto has by far the largest per cent of owners over .30 GDS at 13.5 per cent of all households while Ottawa is second at 5.7 per cent. On the other hand, Windsor has only 4.1 per cent of owners over .30 GDS, and Thunder Bay is low at 3.7 per cent.

While most interest centres on higher GDS groups, the low GDS groups should not be overlooked. Over half of all owners (52 per cent) report GDS ratios of .10 and less. The large per cent of low GDS owners may seem contrary to popular impressions, because considerable attention has focused on owners who are struggling with rising prices, high mortgage rates and declining real incomes. However, such impressions are deceptive, because 46 per cent of owners do not have mortgages (Table 1.7). Therefore, GDS ratios for 46 per cent of cases are simply taxes divided by income. A large number of low GDS ratios are present among owners who do not hold mortgages.

On the other hand, a conclusion that all households with less than .30 GDS are not financially stressed is not necessarily valid. Many of the low GDS groups are also seniors, and GDS ratios for seniors may not be a good measure of affordability. A senior with a .10 GDS on a small retirement income may have difficulty purchasing utilities, food, etc. on the remaining 90 percent of income. However, a .40 GDS household with a larger income may have a much larger discretionary income.

Table 1.13 - First Mortgage Renewal Date  
Table 1.14 - First Mortgage Interest Rates

Tables of first mortgage renewal dates and interest rates are provided for general information. Some general results are: 39 per cent of mortgage holders must renew first mortgages from October, 1981 to December 1982. An additional 25 per cent must renew during 1983. Toronto is notable because only 26 per cent of owners must renew before 1983 compared to a high of 50 per cent in Hamilton. The relatively low per cent of 1982 renewers in Toronto will reduce the impact of potentially high 1982 mortgage rates on Toronto. The result is noteworthy because Toronto already has a relatively large per cent of householders with high GDS ratios.

Interest rates are very evenly distributed across the cities, and a surprising 72 per cent of first mortgage holders pay mortgage rates of 12 per cent or less. On the other hand, only 5 per cent pay more than 18 per cent.

TABLE 1.1

## DWELLING TYPE BY CITY

	Single Detached (%)	Semi/ Duplex (%)	Row (%)	Apartment (%)	Sample Size (#)
Metro Toronto	70.0	18.5	4.8	6.7	791
Hamilton	85.7	8.3	3.3	2.7	600
London	90.2	7.1	1.9	0.8	730
Windsor	91.7	5.0	2.5	0.8	896
Thunder Bay	93.4	5.9	0.1	0.6	1,245
Sudbury	88.4	9.7	0.8	1.1	922
Ottawa	73.9	10.8	8.6	6.7	655
Total	85.8	9.0	2.7	2.5	5,839

TABLE 1.2

## AGE GROUP BY CITY\*

	24 & less (%)	25-34 (%)	35-44 (%)	45-54 (%)	55-64 (%)	65+ (%)	Sample Size (#)
Toronto	1.2	17.5	20.6	23.4	19.3	18.0	776
Hamilton	3.0	17.8	24.7	22.7	16.3	15.5	600
London	2.1	24.1	23.6	21.6	13.4	15.2	725
Windsor	3.1	19.5	21.2	21.7	15.5	19.0	876
Thunder Bay	1.5	20.4	21.4	21.5	18.7	16.5	1,222
Sudbury	1.2	15.8	25.0	23.4	21.0	13.6	918
Ottawa	1.2	17.2	22.3	22.1	20.3	16.9	647
Total	1.8	19.0	22.6	22.3	17.9	16.4	5,764

\*Age of responding head of household.

TABLE 1.3

## ESTIMATED GROSS HOUSEHOLD INCOME\* BY CITY

	\$24,999 or less (%)	\$25,000- \$34,900 (%)	\$35,000 or more (%)	Median (000's) (\$)	Average (000's) (\$)	Sample Size (#)
Metro Toronto	33.3	26.5	40.2	30.0	35.7	637
Hamilton	35.1	36.8	28.1	28.0	30.6	487
London	35.5	32.0	32.5	28.0	32.0	603
Windsor	45.6	30.4	24.0	27.0	28.5	711
Thunder Bay	36.4	34.7	28.9	28.0	30.6	1,034
Sudbury	38.9	33.8	27.3	28.0	29.9	783
Ottawa	24.6	23.9	51.5	35.0	39.2	528
TOTAL:	36.2	31.5	32.3	28.0	32.0	4,783

\*30 per cent of respondents reported income categories, rather than exact income. Household incomes for such cases, but not including senior households are estimated from the reported categories. In addition, respondents reported 1980 annual income. Incomes are increased by the CPI inflation rate of 12.7 per cent. Overall reliability is improved by the method.

TABLE 1.4

## HOUSEHOLD SIZE BY CITY

	1 Person (%)	2 Persons (%)	3-4 Persons (%)	5-6 Persons (%)	7 or more (%)	Median	Average	Sample Size (#)
Metro Toronto	11.4	35.6	45.7	4.7	2.6	3	3.2	696
Hamilton	8.9	32.5	54.4	2.5	1.7	3	3.2	526
London	8.1	34.1	52.4	3.7	1.7	3	3.2	645
Windsor	13.0	30.6	47.7	5.9	2.8	3	3.2	801
Thunder Bay	12.0	32.2	50.6	3.8	1.4	3	3.2	1,094
Sudbury	8.3	31.2	55.0	4.3	1.2	3	3.2	811
Ottawa	11.7	33.7	48.9	4.0	1.7	3	3.2	581
	10.6	32.7	50.6	4.2	1.9	3	3.2	5,154

TABLE 1.5

YEAR OF PURCHASE  
AMONG MORTGAGE HOLDERS BY CITY

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	1949 or Earlier (%)	1950- 1959 (%)	1960- 1969 (%)	1970- 1974 (%)	1975- 1979 (%)	1980 (%)	1981 (%)	Median Year	Sample Size (#)
Metro Toronto	0.0	2.5	17.3	13.4	46.0	12.6	8.2	77	404
Hamilton	0.3	4.2	15.7	20.5	41.9	8.7	8.7	76	332
London	0.5	1.8	17.6	16.2	44.5	7.8	11.6	77	438
Windsor	0.4	4.2	17.9	18.5	45.8	6.7	6.5	76	448
Thunder Bay	0.8	1.7	19.4	18.7	45.5	8.2	5.7	76	635
Sudbury	0.6	3.0	17.0	20.5	40.4	11.8	6.7	76	493
Ottawa	0.5	6.6	19.6	16.7	39.2	9.8	7.6	76	408
TOTAL:	0.5	3.3	17.9	17.9	43.4	9.3	7.7	76	3,158

TABLE 1.6

PER CENT NEW AND RESALE PURCHASES  
AMONG MORTGAGE HOLDERS BY CITY

	New (%)	Resale (%)	Sample Size (#)
Toronto	30.2	69.8	404
Hamilton	38.0	62.0	334
London	37.7	62.3	440
Windsor	20.8	79.2	448
Thunder Bay	33.9	66.1	635
Sudbury	29.6	70.4	493
Ottawa	34.2	65.8	409
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Total	31.9	68.1	3,163

TABLE 1.7

PER CENT MORTGAGE HOLDERS BY CITY

	<u>Mortgage</u> (%)	<u>No Mortgage</u> (%)	<u>Sample Size</u> (#)
Toronto	51.1	49.0	791
Hamilton	55.7	44.3	600
London	60.3	40.0	730
Windsor	50.0	50.0	896
Thunder Bay	51.0	49.0	1,245
Sudbury	53.5	46.5	922
Ottawa	62.4	38.0	655
	54.2	45.8	5,839
Total			

TABLE 1.8

PER CENT MORTGAGE HOLDERS WITH SECOND MORTGAGES BY CITY

	Mortgage (%)	No Mortgage (%)	Sample Size (#)
Toronto	19.6	80.5	404
Hamilton	9.6	90.4	334
London	9.1	91.0	440
Windsor	11.0	89.1	448
Thunder Bay	5.0	95.1	635
Sudbury	11.0	89.5	493
Ottawa	11.3	88.8	409
	<hr/>	<hr/>	<hr/>
Total	10.4	89.6	3,163

TABLE 1.9

PER CENT OWNER HOUSEHOLDS NOT FACING  
MORTGAGE RENEWAL

	Per Cent Households without mortgages (%)	Per Cent Holding mortgages not requiring renewal (%)	Total Per Cent not facing renewal (%)	Sample Size
Toronto	49.0	6.5	55.5	791
Hamilton	44.3	7.3	51.6	600
London	39.8	7.8	47.6	730
Windsor	50.0	7.7	57.7	896
Thunder Bay	49.0	9.6	58.6	1,245
Sudbury	46.5	10.7	57.2	922
Ottawa	37.6	12.2	49.8	655
TOTAL	45.8	8.9	54.7	5,839

TABLE 1.10

## TOTAL OUTSTANDING MORTGAGE PRINCIPAL\* BY CITY

	\$10,000 or less (%)	\$10,001- \$20,000 (%)	\$20,001- \$30,000 (%)	\$30,001- \$40,000 (%)	\$40,001- \$50,000 (%)	\$50,001- \$60,000 (%)	\$60,001- or more (%)	Median (\$000's) (\\$)	Average (\$000's) (\\$)	Sample Size (#)
Metro Toronto	5.0	12.0	17.9	16.0	15.4	12.6	21.1	40.0	43.1	318
Hamilton	6.7	19.0	24.6	24.3	15.7	6.7	3.0	30.0	31.0	268
London	4.8	12.8	25.8	27.7	15.0	7.6	6.3	32.0	37.1	368
Windsor	6.7	23.9	26.1	22.2	12.1	4.8	4.2	28.0	29.8	356
Thunder Bay	6.7	16.6	24.8	17.9	19.1	8.8	6.1	31.3	33.3	524
Sudbury	5.9	15.8	26.6	24.0	15.8	6.7	5.2	30.8	33.7	387
Ottawa	<u>3.8</u>	<u>16.5</u>	<u>22.4</u>	<u>20.9</u>	<u>16.2</u>	<u>10.2</u>	<u>10.0</u>	<u>33.0</u>	<u>36.8</u>	<u>340</u>
TOTAL:	5.7	16.6	24.2	21.7	15.8	8.2	7.8	31.5	34.9	2,561

\*At time of renewal.

TABLE 1.11

TOTAL MONTHLY PAYMENTS\* BY CITY

	<u>\$200 or less</u> <u>(%)</u>	<u>\$201- \$300</u> <u>(%)</u>	<u>\$301- \$400</u> <u>(%)</u>	<u>\$401- \$500</u> <u>(%)</u>	<u>\$501- \$600</u> <u>(%)</u>	<u>\$601- \$700</u> <u>(%)</u>	<u>\$700 or more</u> <u>(%)</u>	<u>Median</u> <u>(\\$)</u>	<u>Average</u> <u>(\\$)</u>	<u>Sample Size (#)</u>
Metro Toronto	54.7	6.2	6.0	9.0	7.0	4.3	12.8	167	317	726
Hamilton	53.4	8.5	10.6	15.3	5.8	3.0	3.4	186	260	556
London	48.8	7.8	16.2	12.4	6.9	3.2	4.7	217	281	681
Windsor	56.6	13.1	13.4	7.4	4.1	3.0	2.4	155	226	846
Thunder Bay	58.8	7.3	11.2	12.1	5.5	3.0	2.1	122	225	1,211
Sudbury	54.4	10.8	11.1	11.3	6.9	2.2	3.3	174	259	872
Ottawa	44.8	<u>11.2</u>	<u>10.2</u>	<u>12.6</u>	<u>7.7</u>	<u>6.0</u>	<u>7.5</u>	<u>242</u>	<u>333</u>	<u>597</u>
<b>TOTAL:</b>	53.9	9.2	11.3	11.3	6.1	3.4	4.8	175	5,265	5,489

\*Including Principal, Interest and Taxes.

TABLE 1.12

## ESTIMATED GROSS DEBT SERVICE RATIO\* BY CITY

	<u>.100 or less</u> (%)	<u>.101- 200</u> (%)	<u>.201- 300</u> (%)	<u>.301- 400</u> (%)	<u>.401- 500</u> (%)	<u>.501- 600</u> (%)	<u>.601 or more</u> (%)	<u>Median</u>	<u>Average</u>	<u>Sample Size (#)</u>
Metro Toronto	51.7	21.4	16.4	7.8	3.1	1.2	1.4	.092	.141	585
Hamilton	48.3	32.0	15.5	2.6	0.7	0.2	0.7	.105	.126	459
London	48.9	30.3	16.1	2.8	1.1	0.4	0.4	.103	.125	564
Windsor	54.3	29.8	11.8	1.9	1.0	1.2	0.0	.087	.117	678
Thunder Bay	53.7	30.3	12.3	2.5	0.9	0.2	0.1	.083	.109	966
Sudbury	51.0	31.5	12.7	3.5	0.8	0.4	0.1	.096	.120	740
Ottawa	<u>51.3</u>	<u>32.3</u>	<u>10.7</u>	<u>3.5</u>	<u>1.2</u>	<u>0.0</u>	<u>1.0</u>	<u>.099</u>	<u>.126</u>	<u>486</u>
<b>TOTAL:</b>	51.6	29.7	13.5	3.0	1.2	0.5	0.5	.094	.122	4,478

\*Gross Debt Service ratios are total monthly payments (principal, interest & taxes) divided by monthly gross household income. The income estimates described in Table 1.3 were used.

TABLE 1.13FIRST MORTGAGE RENEWAL DATE BY CITY

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985-</u> <u>1989</u>	<u>1990-</u> <u>1999</u>	<u>2000 or</u> <u>after</u>	<u>Median</u> <u>Year</u>	<u>Sample</u> <u>Size</u> <u>(#)</u>
Metro Toronto	26.4	28.7	19.4	22.0	3.5	0.0	1983	314
Hamilton	49.6	18.8	13.2	14.3	4.1	0.0	1983	266
London	33.7	27.3	17.2	18.1	3.7	0.0	1983	348
Windsor	37.9	27.3	18.1	14.5	2.0	0.3	1983	338
Thunder Bay	39.0	27.8	15.7	14.2	3.3	0.0	1983	472
Sudbury	45.1	22.3	13.8	15.2	3.6	0.0	1983	355
Ottawa	<u>41.1</u>	<u>22.6</u>	<u>12.0</u>	<u>19.9</u>	<u>4.4</u>	<u>0.0</u>	<u>1983</u>	<u>292</u>
<b>TOTAL:</b>	38.8	25.3	15.7	16.7	3.5	0.0	1983	2,385

TABLE 1.14

## FIRST MORTGAGE INTEREST RATES BY CITY

	<u>9%</u>	<u>9.1-12%</u>	<u>12.1-15%</u>	<u>15.1-18%</u>	<u>18% +</u>	Median (000's) (\$)	Average (000's) (\$)	Sample Size (#)
Toronto	21.7	47.9	19.0	7.7	3.7	10.75	11.2	401
Hamilton	21.0	52.3	12.4	7.9	6.4	10.75	11.3	330
London	18.5	51.4	17.1	7.2	5.8	10.75	11.3	432
Windsor	21.2	53.2	15.8	4.8	5.0	11.00	11.2	442
Thunder Bay	21.5	5.7	16.6	5.1	5.1	10.75	11.1	631
Sudbury	21.3	47.0	19.3	7.0	5.4	11.0	11.3	483
Ottawa	<u>27.7</u>	<u>46.0</u>	<u>16.1</u>	<u>6.2</u>	<u>4.0</u>	<u>10.75</u>	<u>10.8</u>	<u>403</u>
TOTAL:	21.8	50.0	16.8	6.4	5.0	10.75	11.2	3,122

### II. COMPARISON OF HIGH TO LOW GDS HOUSEHOLDS

High GDS owner households are defined as those spending more than 30 per cent of gross household income for house payments that include principal, interest and taxes. Tables 2.1 to 2.9 provide various comparisons of social and financial measures between the high and low GDS groups. One of the more important findings is the relative size of the high GDS group. Just over 5 per cent of owner households have GDS ratios greater than .30. Judging from the publicity that surrounds current high mortgage rates, many popular impressions would suggest a much larger group.

Inspection of Table 2.1 reveals very strong differences between high and low GDS groups, particularly among the financial measures. For example, average monthly payments are \$673 for the high GDS group, compared to \$270 for the low group. Similar differences between outstanding principals are present at \$48,200 compared to \$33,700. Average first mortgage rates for the high group are 13.5 per cent compared to 11.1 per cent. In addition, very strong differences are present between per cent holding mortgages. The high GDS group are strongly mortgage holders with 95.2 per cent holding first mortgages and 28.9 per cent second mortgages, compared to 60.2 per cent and 5.4 per cent among the low GDS group.

Generally, the high GDS group can be characterized as high on all financial variables. A typical high GDS household has the following features:

- mortgages
- relatively high monthly payments
- high mortgage rates
- high outstanding principal.

On the other hand, high GDS households also have substantially lower average incomes at \$19,700 compared to \$37,000 per year. The survey statistics verify what may be a common impression: typical high GDS households combine high cost factors with low incomes. On the other hand, low GDS groups combine low cost factors with high incomes. The relationship between costs and incomes for high and low GDS groups is illustrated in the Table below.

Relationship Between Costs and Income Between High and Low GDS Households

	Low GDS Households (\$)	High GDS Households (\$)
Average Payments	270	673
Average Income	32,200	19,700

Of course, a variety of explanations are available to explain the combination of high costs and low incomes among owners who have GDS's in excess of .30 per cent. For example, typical high GDS households may be recent first-time buyers, young families with expectations of

increasing incomes, recent mortgage renewers at high interest rates or perhaps have large household sizes and must opt for a larger home.

If true, the above explanations would produce a high GDS group that is relatively young, purchased a house recently, have high mortgage rates and larger household sizes. Inspection of the social characteristics in Table 2.1 indicates that the above differences are present. For example, 34 per cent of the high GDS group are less than 35 years of age compared to 23 per cent in the low GDS group, and 13 per cent have household sizes greater than 4 persons compared to 7 per cent. In addition, 29 per cent purchased since 1980 compared to 16 per cent. High GDS groups also average mortgage rates of 13.5 per cent compared to 11.1 per cent in the low group.

Although substantial differences between the high and low GDS groups are present, concentration on the differences may obscure the substantial similarity between GDS groups along many social dimensions. In fact, such descriptions as young, recent, first-time home buyer, describe a relatively small proportion of the high GDS group. The remaining proportion of the high group shows great similarity to the low group. The extent of differences and similarities between high and low groups is best portrayed by the frequency distributions in Tables 2.2 to 2.9.

For example, an identical 62 per cent in each group purchased homes between 1970 and 1979. All the Tables show similar results. Group differences are found in extreme categories of the frequency distributions but the mid-categories are strikingly similar.

A basic conclusion is that descriptions such as young, first-time buyer do not fit a large part of the high GDS group. If such explanations fail to account for a large per cent of the high GDS group, then alternate explanations might be considered. One possible explanation is that a substantial part of the high GDS group appears to have opted for a higher level of shelter consumption than comparable income households in the low GDS group. However, other explanations are also possible. Many uncontrollable factors such as ill-health can turn a once prudent home purchase into a financial strain.

TABLE 2.1  
COMPARISON OF HIGH AND LOW  
GDS\* HOUSEHOLD CHARACTERISTICS

	GDS GROUP	
	To 30%	More than 30%
Average Household Income	\$32,000	\$19,700
Average Principal @ last renewal	\$33,700	\$48,200
Average Monthly payments	\$ 270	\$ 673
Average first mortgage Interest Rate	11.1	13.5
Per cent households of 5 + persons	6.7	13.3
Per cent purchasers from 1980 to 1981	16.3	28.9
Per cent mortgage holders	60.2	95.2
Per cent 2nd mortgage holders	5.4	29.7
Per cent household heads less than 35 years	23.4	33.9
Sample size	4,249	229

\* High GDS households are those paying more than 30% gross household income for house payments including principal interest and taxes.

TABLE 2.2

COMPARISON OF HOUSEHOLD SIZE BY  
ESTIMATED GROSS DEBT SERVICE RATIO

<u>PERSONS PER HOUSEHOLD</u>	<u>GDS RATIO</u>	
	To .30 (%)	.31 & More (%)
1	8.1	9.6
2	28.5	22.9
3 & 4	56.6	54.2
5 & 6	4.8	6.4
7 & more	2.0	6.9
Sample Size	3,688	188

TABLE 2.3

COMPARISON OF TOTAL MONTHLY PAYMENTS  
BY ESTIMATED GROSS DEBT  
SERVICE RATIO\*

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MONTHLY PAYMENTS (\$)	GDS RATIO	
	To .30 (%)	.31 & More (%)
\$200 & less	49.1	4.8
\$201 - \$300	10.7	2.2
\$301 - \$400	13.2	8.7
\$401 - \$500	13.1	14.9
\$501 - \$600	6.5	20.5
\$601 - \$700	3.5	13.1
\$701 & More	3.9	35.8
Average	\$270	\$673
Sample Size	4,249	229

\*Payments include Principal, Interest  
& Taxes.

TABLE 2.4

COMPARISON OF GROSS HOUSEHOLD ANNUAL  
INCOME\*BY ESTIMATED GROSS  
DEBT SERVICE RATIO

<u>HOUSEHOLD INCOME</u>	<u>GDS RATIO</u>	
	To .30 (%)	.31 & More (%)
Less than \$25,000	34.7	76.0
\$25,000 - \$34,999	32.6	18.8
\$35,000 & More	32.7	5.2
Average	\$32,200	\$19,700
Sample Size	4,249	229

\*Income estimates are used.  
See Table 1.3 for details.

TABLE 2.5

COMPARISON OF TOTAL PRINCIPAL\* BY  
ESTIMATED GROSS DEBT SERVICE RATIO

<u>PRINCIPAL</u>	<u>GDS RATIO</u>	
	To .30 (%)	.31 & More (%)
\$10,000 & less	5.6	4.4
\$10,001 - 20,000	17.2	8.3
\$20,001 - 30,000	24.5	12.2
\$30,001 - 40,000	21.5	22.1
\$40,001 - 50,000	16.3	16.6
\$50,001 - 60,000	8.3	13.3
\$60,001 & More	6.6	23.1
Average	\$33,700	\$48,200
Sample Size	2,219	181

\*Total principal at last  
mortgage renewal.

TABLE 2.6

COMPARISON OF YEAR PURCHASED AMONG  
MORTGAGE HOLDERS BY ESTIMATED  
GROSS DEBT SERVICE RATIO

PURCHASE YEAR	GDS	
	To .30 (%)	.31 & More (%)
Before 1950	0.4	0.9
1950 - 1959	3.2	1.4
1960 - 1961	18.0	6.9
1970 - 1974	18.0	15.1
1975 - 1979	44.1	46.8
1980	8.9	15.6
1981	7.4	13.3
Sample Size	2,551	218

TABLE 2.7

COMPARISON OF PER CENT MORTGAGE HOLDERS  
AND PER CENT SECOND MORTGAGE HOLDERS  
BY GROSS DEBT SERVICE RATIO

<u>MORTGAGE</u>	GROSS DEBT SERVICE	
	To .30 (%)	.31 & More (%)
First Mortgage Holders	60.2	95.2
Second Mortgage Holders	5.4	29.7
Sample Size	4,249	229

TABLE 2.8

COMPARISON OF HEAD OF HOUSEHOLD AGE  
BY GROSS DEBT SERVICE RATIO

<u>AGE</u>	<u>GROSS DEBT SERVICE</u>	
	To .30 (%)	.31 & More (%)
Less than 25	1.9	4.0
25 - 34	21.5	29.9
35 - 44	25.4	27.3
45 - 54	24.4	20.7
55 - 64	19.8	12.8
65 & more	7.0	5.3
Sample Size	4,228	227

TABLE 2.9

COMPARISON OF FIRST MORTGAGE INTEREST  
RATES BY GROSS DEBT SERVICE RATIO

<u>INTEREST RATE</u>	<u>GROSS DEBT SERVICE</u>	
	To .30 (%)	.31 & More (%)
9.0% & less	22.0	4.2
9.1% - 12.0%	51.1	43.9
12.1%- 15.0%	16.7	24.3
15.1%- 18.0%	5.8	12.4
18.1% & more	4.4	15.2
Average	11.1%	13.5%
Sample Size	2,541	217

### III. FINANCIAL PROJECTIONS BY YEAR

The higher interest rates experienced during the past several years have focused considerable public attention on families who must renew mortgages during peak interest periods. Various widely ranging estimates of the number of families likely to lose their homes have been published. Sufficient variables were present in the survey data to allow calculations of projected monthly payments at various interest rate assumptions for owners who must renew mortgages. In addition, projected GDS ratios are calculated from projections of household income.

An extensive financial analysis of survey data was performed, and various financial measures of households that must renew mortgages are presented in Table 3.1. Before summarizing the most significant findings of the financial projections, a comment about methodology is necessary.

#### A) Methods

As indicated in the Appendix, the financial and income history of households can be extremely complex. Telephone survey methodology was not sufficiently flexible to record all details in particularly elaborate histories. Measurement error was introduced because some detail was eliminated, and the recall of respondents for variables such as outstanding principal must be assumed accurate. Obviously, survey data quality is not

equivalent to audited financial statements. On the other hand, the data are of sufficient quality to produce realistic descriptive statistics. However, a feature common to all survey results is that interpretation of the statistics require various assumptions.

In general, the statistics are of adequate descriptive quality, but the methods used to calculate the financial projections deserve considerable comment. The projections present special analytic problems, because the calculations require valid responses to a number of questions. Calculations cannot be performed unless a respondent answers all related questions. A large number of cases would 'drop-out' of the analysis unless methods are used that supply reliable estimates for unanswered questions. The various methods are described below.

- 1) A standard amortization calculation requires valid measures of the principal, payment, interest rate and number of payments. Valid measures of any three of the variables enables calculation of the fourth. Calculations were performed if either first mortgage monthly payment or outstanding principal was missing and the mortgage had not been renewed. Such calculations assumed that no principal repayments or draw-downs occurred.
- 2) In addition to principal, payment, interest and number of payments, remaining balance calculations required knowledge of the starting date of the mortgage. The starting date was assumed to be June of the year of purchase for households where new mortgages were arranged. Respondents who acquired existing

mortgages may not have been sufficiently aware of mortgage details to furnish reliable information. Therefore, financial analysis was performed only for those households where new mortgages were arranged.

- 3) The financial results would be biased if substantial differences between new and existing mortgage holders were present. However, a significant bias in the financial analysis was considered unlikely, since comparison of new and existing mortgage holders across a large number of social and financial variables did not reveal strong group differences. In particular, present GDS ratios were very similar and renewal date showed little difference. Some difference was present for year of purchase, but an assumption that new and existing mortgage groups are equivalent still seems realistic. In addition, the potential biasing effects are not large, because the existing mortgage group is fairly small. Only 26 per cent of purchasers acquired existing purchases.
- 4) Remaining balance calculations for mortgages where renewals have occurred required knowledge of the last renewal date. The date of last renewal was surveyed, and financial projections for renewers were calculated. However, the financial calculations assumed that no refinancing prior to the last renewal had occurred.
- 5) All four variables in an amortization calculation are interdependent and, therefore, the values of all variables must be consistent. However, respondent's recall of monthly payments and outstanding principals were not sufficiently accurate for standard financial calculations. Therefore, to ensure consistent values, monthly payments that were required in remaining balance calculations were derived from reported principals, interests and amortization periods.

B) Description of the Financial Projection

Standard financial calculations were performed to estimate new monthly payments at time of renewal for assumed mortgage rates at 14 and 19 per cent. In

addition, the results of refinancing remaining balances at 16.5 per cent for 25 years were estimated. Projected taxes were added to the various assumed renewal payments, and estimated household incomes were projected for the GDS calculations. Reported taxes and incomes were projected using the inflation factors listed below:

<u>Year</u>	<u>Simple Inflation (%)</u>	<u>Compound Inflation Rate (%)</u>
1982	11	11.0
1983	21	10.0
1984	31	9.4
1985	40	8.8
1986	48	8.2

The remaining balances, at time of renewal, were calculated for each household that indicated a renewal date. Three different monthly payments were calculated that reflect each of the mortgage renewal assumptions. Taxes were projected to the renewal year and added to monthly payments. Incomes were also projected and GDS ratios calculated for each renewal assumption.\*

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\*Income estimates were used in calculation of GDS projections. Inclusion of the estimates produced slightly higher GDS results.

First mortgage payments, taxes and household incomes are projected to 1984, but the projected monthly payments do not include second mortgage payments. An important assumption is that households are able to clear outstanding second mortgages before renewal. If second mortgages are unable to be cleared, then owners are assumed to rent part of their house to generate incomes equal to second mortgage payments. Obviously, the second mortgage assumptions are not applicable to every case, but they are probably realistic, even if uncomfortable, for most home owners.\*

C) Financial Analysis of the Mortgage Renewal Projections

Table 3.1 contains descriptive statistics by year for owners who report mortgage renewal dates before 1985. The probability that some 1982 renewers will also renew during 1983 and 1984 is not reflected in Table 3.1. A further assumption is made that no new buyers will enter the market. Percentile distributions and averages are provided for the GDS ratios calculated at various mortgage renewal assumptions which are as follows:

- monthly payments calculated on first mortgage remaining balances at 19 per cent interest
- monthly payments calculated on first mortgage remaining balances at 14 per cent interest

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\*As shown in Table 3.1, inclusion of present second mortgage payments in the GDS projections does not result in dramatic changes in GDS characteristics.

- monthly payments calculated on first mortgage remaining balances at 16.5 per cent interest but refinanced over 25 years
- monthly payments calculated as above at 19 per cent interest but including present second mortgage payments

In addition, percentile distributions and averages are provided for remaining balances, the per cent change between the present payments and the payments projected under various renewal assumptions and gross household income.

In Table 3.1, the 25th, 50th, 75th and 95th percentiles\* are provided. The first three percentiles are often termed quartiles because they divide a population into four equal parts. The 50th percentile is a special case because it divides a population in half and is usually termed the median. The 95th percentile is of interest because a minimum value for the top 5 per cent of a population is given. Slightly more than 5 per cent of present owners report GDS ratios in excess of .30, and comparison of the 95th percentiles under various mortgage renewal assumptions suggest if the top 5 per cent of renewers is projected to become more or less financially strained.

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\*Percentiles describe distribution of values across a variable. For example, if the 25th percentile for a GDS variable is equal to .122 and 75th percentile equal to .215, then 25 per cent of the population falls below that .122 and 75th per cent is less than .215.

D) Summary of Findings

Gross Debt Service Ratios

Table 3.1 reveals some unexpected findings about owners who must renew first mortgages.

Renewers tend to have higher present GDS ratios than owners in general. Average GDS ratios among renewers are about .18 and medians are near .17 while the average for all owners is .12 and the median is .09. However, higher GDS ratios among renewers should be expected, because nearly half of all owners do not have mortgages and only pay taxes.

Perhaps the most remarkable finding is how little GDS ratios change given the different renewal assumptions. For example, average GDS ratios among owners who will renew during 1982 is currently .181. However, under a 19 per cent interest rate assumption, the average GDS ratio will only increase to .210. The averages actually decrease under 14 per cent as well as the 16.5 per cent refinanced assumption. The 95th percentile shows similar changes. Before renewal, the 95th percentile for 1982 renewers is .357 but rises to .387, given a 19 per cent assumption, and declines for the other two renewal assumptions.

A conclusion from the above statistics is: If mortgage rates are 19 per cent during 1982, then the top 5 per cent of GDS's, the 95th to 100th percentiles, will become more

financially strained. However, the increased burden is moderate, because the top 5 per cent starts at .357 GDS before renewal and only increases to .387 GDS. On the other hand, renewers will become less strained if either of the other two mortgage assumptions prevail during 1982. Such results may seem inconsistent, because many renewers are currently paying low mortgage rates. An increase to even 14 per cent might be expected to produce much larger GDS increases. The principal explanation is that increases in monthly payments, due to increased mortgage rates, are offset by increased household income, but two other explanations are also relevant.

The first explanation centres on the second mortgage assumption. Owners are assumed able to clear second mortgages before renewal. Therefore, some owners will experience reduced GDS ratios even though renewal payments are calculated at higher interest rates. A second explanation is that some households already pay high interest rates. Some owners bought during 1981 during peak interest rates and negotiated one-year term mortgages. Such renewers will experience reduced interest rates at 16.5 and 14 per cent renewal assumptions.

Per Cent Change: Present to Renewal  
Monthly Payment

The similarity of present and renewal GDS ratios noted in the previous section may raise some questions. For

example, most renewers will experience substantial interest rate increases, and therefore, monthly payments should increase dramatically. If all renewals during 1982 are calculated at 19 per cent interest, then a substantial increase in median GDS ratios might be expected. However, the financial projection produced only a .04 increase in median GDS. A basic question is: Why do large interest rate increases not produce dramatic increases in median GDS ratios?

One possible answer is that the income projections are overly generous. However, the projections are actually fairly conservative at 11 per cent increase allowed during 1982, and compound interest increases near 9 per cent through 1984. Another explanation is that the large number of renewers are already paying interest rates near 19 per cent and, therefore, the 19 per cent renewal assumption produces little change in GDS ratios. However, less than 17 per cent of the 1982 renewers currently pay more than 15 per cent interest.

The most likely answer to the somewhat paradoxical findings that present GDS and 19 per cent renewal GDS ratios are similar, lies partially in a bit of a 'numbers game'. Statistics in Table 3.1 indicate that large increases in monthly payments are present. Median increases under the 19 per cent assumption are more than 40 per cent. Such per cent increases are relatively

large and within the range of many published estimates. However, due to the method of calculating GDS ratios, a large increase in monthly payment does not necessarily produce a large GDS increase.

As noted, the GDS ratio is calculated as: projected monthly payments divided by projected monthly income. The result of a large per cent increase in payments divided by a small per cent increase in income may produce little change in the resulting GDS ratios. In the hypothetical example which follows, a 40 per cent increase in payments combined with a 10 per cent increase in income produces an 11 per cent increase in GDS from .21 to .32.

$$\frac{\text{Payment}}{\text{Income}} = \frac{500}{2000} = .21 \text{ GDS} = \frac{\text{Payment} \times 40\%}{\text{Income} \times 10\%} = \frac{700}{2200} = .32 \text{ GDS}$$

The above 'number juggling' illustrates an important conclusion. GDS is a measure of financial strain for affordability, and affordability is generally the implied subject when large mortgage payment increases are cited. However, as demonstrated, a spectacular increase in monthly payments does not necessarily produce a dramatic change in the affordability measure GDS. By itself, per cent change in payments is not an affordability measure.

TABLE 3.1

FINANCIAL CHARACTERISTICS OF MORTGAGE  
RENEWERS BY YEAR

Characteristics	Percentile			Characteristics			1982	1983	1984	1984
	1982	1983	1984	1982	1983	1984				
Present GDS Ratio	95	.357	.305	.329	% Change		64.5	65.1	59.4	
75	.215	.230	.231	Present to		54.8	57.8	51.6		
50	.167	.170	.179	Renewed		41.0	47.9	41.2		
25	.122	.129	.127	Payments		7.7	22.8	12.0		
Average	.181	.180	.189	@ 19%		30.7	38.1	33.3		
GDS @ 19½% Mortgage Renewal Rates	95	.387	.383	.363	% Change		27.8	28.3	26.7	
75	.265	.258	.242	Present to		23.0	24.9	19.8		
50	.202	.200	.176	Renewed		14.9	19.0	14.1		
25	.138	.137	.122	Payments		- 9.8	1.4	- 6.9		
Average	.210	.210	.190	@ 14%		5.1	11.0	8.2		
GDS @ 14½% Mortgage Renewal Rates	95	.307	.302	.287	% Change		42.8	43.3	38.8	
75	.209	.208	.189	Present to		35.9	37.7	32.9		
50	.161	.157	.144	Renewed		22.2	26.5	21.5		
25	.112	.111	.100	Payments		-10.5	4.6	- 6.4		
Average	.169	.167	.153	@ 16½%		10.1	16.2	9.5		
GDS @ 19½% Mortgage Renewal Rates Re- financed to 25 Years	95	.338	.335	.307	1st Mortgage		61.1	61.4	76.0	
75	.226	.227	.209	Remaining		43.3	46.6	48.7		
50	.172	.171	.151	Balances @		34.9	36.6	37.9		
25	.114	.114	.102	Renewal		22.5	25.5	26.3		
Average	.176	.178	.159	(000's)		33.6	35.7	38.7		
GDS @ 19½% Mortgage Renewal Rates incl. 2nd mortgage Average payments. All renewal years.	95	.415	.383	.363			68.0	61.0	72.0	
75	.269	.261	.246			42.0	39.0	45.0		
50	.205	.202	.182	Estimated Gross		32.0	30.0	34.0		
25	.140	.140	.127	Household Income		24.0	23.0	24.0		
Average	.215	.212	.196			34.3	33.2	37.2		
Sample Size	474	324	223			489	342	230		

APPENDIX



APPENDIX

Survey Background

The original objectives for housing surveys conducted in past years have been limited to the rental housing market, but market conditions during 1981 demonstrated a need to make information about ownership housing available.

An expansion of the Rental Market Survey to include ownership households was relatively easy, because a major interviewing task was the identification of rental households and the screening out of all other respondents. A random sample of ownership households was incidentally contacted as a result of screening for the rent survey. The ownership survey was conducted simply by furnishing interviewers with one questionnaire for rents and another for owners. The ownership survey is actually a by-product of the rent survey.

Use of the Rental Market Survey as a vehicle for the ownership survey is convenient, but the particular survey methodology may reduce data reliability. Reliability may be reduced, because financial arrangements for a house can be extremely complex, but a telephone survey only measures the respondent's memory of financial detail. Few respondents are willing to look up specific information such as outstanding principal and make arrangements to complete the interview at a later time. If respondents are not aware of exact details, then data reliability will suffer.

However, some research indicates that respondent's recollection is surprisingly accurate. Consequently, the financial measures may not be interpreted like 'audited financial statements' but the reliability is certainly sufficient for the types of analysis contained in the previous sections.

#### Sample Reliability

In addition to the subject of measurement error, all sample survey results are subject to sampling error. All papers that present sample survey statistics must deal with the subject of sampling error in one way or another. As is becoming better known, survey estimates are seldom exactly equal to true values because not all units are surveyed. Therefore, if two sample statistics are similar, then the two statistics cannot be realistically considered as different. For example, 11 per cent of Windsor and 9 per cent mortgage holders in London also have second mortgages (Table 1.8). However, the sampling error is sufficiently large that London could easily have a lower rather than higher per cent of second mortgage holders.\* Therefore, Windsor and London realistically cannot be considered to have different levels of second mortgage holders.

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\* A method of judging the sampling error is described in the following section.

Sampling error is evaluated by formal tests but presentation of such tests is ponderous. However, presentation of sample statistics in table formats invites comparisons of statistics that may not be realistically considered different. Therefore, test results are conveyed by printing statistical tables in two different types.

For all tables in the body of this report, statistics printed in italic type indicate that the differences are too small to be considered genuine. Statistics that show stronger differences are printed in regular type face.

Many statistical tests can be calculated for each table but only test results for the most basic level of comparison in a table can be indicated by the *italics* convention. For example, Table 1.14 gives the distribution of first mortgage interest rates by city. The statistics are printed in *italics* because standard statistical tests indicate only trivial differences in interest rates across cities are likely.

However, comparisons of specific statistics within tables are at risk even if strong overall differences are indicated. For example, Table 1.11 gives monthly payments by city. The Toronto and Hamilton per cent of owners making payments of \$200 or less is 54.7 and 53.4 per cent respectively. Although strong overall differences are present, the specific Toronto/Hamilton difference cited above is not large enough to be considered genuine. Table 4.1 is provided to assist

readers who are interested in making detailed comparisons of percentage statistics. Comparison of averages presents a similar problem, but general guides cannot be constructed. Such comparisons require variance measures and specific calculations. However, to enable such comparisons, Table 4.2 is provided. The table gives the statistical precision for each variable where averages are presented in the various tables.

A final note regarding sample reliability is needed. Given the current interest in homeownership finances and available resources, some relaxation of traditional methods was needed to produce timely results. Specifically, some formal checks during final data editing and analysis were relaxed in favour of less rigorous inspection techniques. In addition, statistical tests for all comparisons implied or cited in text were not calculated. However, statistics that support basic conclusions were thoroughly tested and sufficient data editing was undertaken to ensure basic integrity of the data.

Use of Table 4.1: Approximate Precision  
of Percentage Estimates

As noted in the Introduction, all sample survey results are subject to sampling error, and therefore, sample statistics are seldom exactly equal to true values. Interpretations of sample survey statistics are always subject to various questions that relate to sampling error. The primary question is: How close to the true value is a survey statistic likely to be?

Probability laws can be used to construct intervals around sample percentages such that the true value has a 95 per cent chance of residing within the interval. The result is a range of values that has a high chance of containing the True Value. Therefore, sample survey statistics are best interpreted as the sample statistics plus and minus some value that can be interpreted as the statistic's precision. Statistics that are subject to high sampling error have low precision.

The values in Table 4.1 give the approximate precision of percentages across a range of sample sizes. For example, as can be seen in Table 4.1, a survey statistic of 20 per cent from a sample size of 400 has a precision of 4.0 per cent. Therefore, a range from 16 per cent to 24 per cent (20 per cent plus and minus 4 per cent) has a 95 per cent chance of containing the true value.

The precision estimates in Table 4.1 underscore the risks of interpreting sample survey statistics as absolute

measures. For example, on page 55 in the Appendix, the per cent of households paying less than \$200 per month were given. The Appendix states that the two percentages could not be treated realistically as different values. The example below provides a graphic rationale for the conclusion:

- From Table 1.11, the per cent of Toronto and Hamilton owners who pay \$200 a month or less are 54.7 and 53.4 respectively. The sample sizes are 726 and 556.
- From Table 4.1 the following intervals can be constructed:

	<u>Approx.</u> <u>%</u>	<u>Sample</u> <u>Size</u>	<u>Precision</u>	<u>Interval</u>
Toronto	50	800	$\pm 3.6$	51.1 - 58.3
Hamilton	50	600	$\pm 4.1$	49.3 - 57.5

As can be seen, the intervals almost completely overlap. Therefore, the chances are nearly overwhelming that only trivial differences between the true percentages of low payment owners are present. Toronto and Hamilton should not be considered to have different levels of low payment owners, because the precision intervals are almost identical. Specific tests are available if readers wish to make detailed comparison of percentage statistics, but professional statistical consultation should be sought.

TABLE 4.1

APPROXIMATE PRECISION OF PERCENTAGE  
ESTIMATES

(In Percentage Points at 95%  
Confidence Level)

Percentage Estimates Near	<u>1200</u>	<u>1000</u>	<u>800</u>	<u>600</u>	<u>400</u>	<u>200</u>	<u>100</u>	<u>50</u>
5	1.2	1.3	1.5	1.7	2.1	3.0	*	*
10	1.7	1.9	2.1	2.5	3.0	4.2	6.0	*
20	2.3	2.5	2.8	3.3	4.0	5.7	8.0	*
30	2.6	2.9	3.2	3.8	4.6	6.5	9.2	12.8
40	2.8	3.1	3.5	4.0	4.9	6.9	9.8	13.7
50	2.9	3.2	3.6	4.1	5.0	7.1	10.0	14.0
60	2.8	3.1	3.5	4.0	4.9	6.9	9.8	13.7
70	2.6	2.9	3.2	3.8	4.6	6.5	9.2	12.8
80	2.3	2.5	2.8	3.3	4.0	5.7	8.0	*
90	1.7	1.9	2.1	2.5	3.0	4.2	6.0	*
95	1.2	1.3	1.5	1.7	2.1	3.0	*	*

\*Approximations cannot be made.

Use of Table 4.2: Precision of Average Estimates

The values in Table 4.2 give precision estimates for all averages contained in the various tables. For example, Table 1.3 gives the average gross household income in Toronto as \$35,700. The corresponding precision in Table 4.2 is \$1,669.30. The interpretation for precision estimates of averages is identical to the interpretation for percentage estimates already described. In the example above, Toronto incomes should be interpreted at \$35,700 plus and minus \$1,669. Therefore, the true Toronto average income will reside within the interval \$34,030.70 - \$37,369.30 with a 5 per cent chance of error.

TABLE 4.2

PRECISION OF AVERAGE ESTIMATES  
 (Standard errors multiplied by 1.96)

SECTION I: Social and Financial Characteristics of  
 Home Owners by City

Table		Toronto	Hamilton	London	Windsor	Thunder Bay	Sudbury	Ottawa
1.3 -	Household Income	1669.30	1468.30	1390.00	1089.30	870.20	1085.60	1648.00
1.4 -	Household Size	0.1	0.107	0.100	0.102	0.078	0.087	0.112
1.10 -	Total Principal	2670.9	1729.2	5529.6	1631.3	1413.7	1891.1	2160.3
1.11 -	Monthly Payment	22.9	18.51	24.71	13.56	15.65	26.10	35.50
1.12 -	Est. Gross Debt Service	.001	.009	.008	.007	.006	.007	.010
1.13 -	1st. Mortgage Rate	0.32	0.39	0.32	0.30	0.27	0.32	0.34

SECTION II: Comparison of High to Low GDS Households

<u>Table</u>	<u>.01-.30 GDS</u>	<u>.30+ GDS</u>
2.4 Household Income	491.6	1156.7
2.5 Total Principal	723.8	4510.7
2.3 Monthly Payment	6.6	44.3
2.9 Interest	.127	.487

SECTION III: Financial Projections by Year

<u>Table</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
3.1 Present GDS	.008	.008	.012
3.1 GDS @ 19% Renewal	.010	.012	.012
3.1 GDS @ 14% Renewal	.008	.009	.010
3.1 GDS @ 16½% Renewal	.008	.011	.011
3.1 GDS @ 19% 2nd.Mtg.	.010	.012	.013
3.1 Payment @ 19%	3.2	2.9	4.4
3.1 Payment @ 14%	2.5	2.1	3.7
3.1 Payment @ 16½%	3.2	3.3	4.4
3.1 Balance	1392.0	1670.8	2653.8
3.1 Income	1336.5	1519.8	2475.5

